



*** VERSION SHOWING CHANGES MADE ***

CLAIMS

1. (Currently Amended) A valve assembly comprising:

a plug having a valve seat at a distal portion of the plug, said plug having an outer round perimeter defining a first cross sectional area at a radially exterior holder interface surface;

a holder cantileveredly connected to the plug internal to the outer round perimeter and extending distally past the plug;

an actuator operably connected to the holder;

a poppet connected to the actuator, said poppet driven by the actuator intermediate an open configuration wherein a fluid passes intermediate the valve seat and the poppet and a closed configuration wherein the poppet forms a seal relative to the valve seat;

wherein the holder, actuator and poppet are positioned within a second cross sectional area parallel to the first cross sectional area when in at least one of the open and closed configurations, said second cross sectional area less than and bounded by a parallel cross section of the first cross sectional area.

2. (Original) The valve assembly of claim 1 wherein the actuator has at least one shape memory alloy member.

3. (Currently Amended) The valve assembly of claim 2 wherein the at least one shape memory alloyw member is further comprised of a plurality of linearly moveable shape memory alloy members operably connected together for parallel movement wherein a total movement of

the actuator is greater than a movement of any individual linearly moveable shape memory alloy member.

4. (Original) The valve assembly of claim 1 wherein the actuator places the valve assembly in an open configuration upon receipt of an electrical signal.

5. (Original) The valve assembly of claim 4 further comprising a biasing member and wherein upon a discontinuance of the electrical signal, the biasing member at least assists in placing the valve assembly in a closed configuration.

6. (Currently Amended) The valve assembly of claim 1 wherein the end plug further comprises a boss extending from a face of the end plug, said boss having the valve seat thereon.

7. (Currently Amended) The valve assembly of claim 6 wherein the holder further comprises a base which contacts the face of the end plug.

8. (Original) The valve assembly of claim 6 wherein the boss further comprises a body, a neck and a head, the head having the valve seat, and the neck having a smaller perimeter than an outer perimeter of the head and the body thereby defining a channel intermediate the body and the head.

9. (Original) The valve assembly of claim 8 wherein the holder has a flange which is received within the channel in the boss.

10. (Original) The valve assembly of claim 6 wherein the face has a cross sectional area larger than the cross sectional area of the holder, the actuator and the poppet in both the open and closed configurations.

11. (Original) The valve assembly of claim 1 wherein the valve seat is located along an axis of the end plug and the poppet is linearly driven along the axis.

12. (Original) The valve assembly of claim 1 further comprising a housing extending about the holder, poppet and actuator.

13. (Original) The valve assembly of claim 12 further comprising an electrical connection exterior to the housing electrically communicating with the actuator.

14. (Original) The valve assembly of claim 13 wherein the electrical connection receives an electrical input from an ignitor, and the valve assembly provides a gas supply through the valve seat to a burner when the valve assembly is in the open configuration.

15. (Original) The valve assembly of claim 14 wherein the valve assembly is normally in the closed configuration and is placed in the open configuration upon receipt of the electrical input exceeding 2.4 Amps.

16. (Original) The valve assembly of claim 15 wherein the valve assembly is placed in the open configuration when the electrical input is intermediate a range of about 2.5 Amps to about 3.1 Amps.

17. (Original) The valve assembly of claim 15 wherein the valve assembly is biased toward the closed configuration and upon one of a loss of the electrical input and the electrical input failing to exceed a predetermined minimum, the valve is returned to the closed configuration.

18. (Original) The valve assembly of claim 12 wherein the housing defines a tube and said plug being a first end plug connected at a proximal end of the tube.

19. (Original) The valve assembly of claim 18 further comprising a second end plug connected to a distal end of the tube.

20. (Currently Amended) A ~~The~~ valve assembly of claim 19 comprising:
a plug having a valve seat at a distal portion of the plug, said plug having an outer perimeter defining a first cross sectional area;
a holder cantileveredly connected to the plug;
an actuator operably connected to the holder;
a poppet connected to the actuator, said poppet driven by the actuator intermediate an open configuration wherein a fluid passes intermediate the valve seat and the poppet and a closed configuration wherein the poppet forms a seal relative to the valve seat;

wherein the holder, actuator and poppet are positioned within a second cross sectional area parallel to the first cross sectional area when in at least one of the open and closed configurations, said second cross sectional area bounded by a parallel cross section of the first cross sectional area;

a housing extending about the holder popped actuator with the housing defining a tube and said plug being a first end plug connected at a proximal end of the tube; and a second end plug connected to a distal end of the tube; and

wherein the second end plug further comprises a passage in communication with a proximal end of the second end plug,

an outlet normally in communication with the passage, a post extending through a portion of the end plug,

a seal located at a proximal end of the post, said seal operable intermediate

an open and a closed configuration, said seal normally in the open configuration wherein the passage and outlet are in fluid communication, and upon movement of the post, said seal obstructing communication from the passage to the outlet thereby placing the second end plug in a closed configuration.

21. (Currently Amended) A ~~The~~ valve assembly of claim 1 further comprising:

a plug having a valve seat at a distal portion of the plug, said plug having an outer perimeter defining a first cross sectional area;

a holder cantileveredly connected to the plug;

an actuator operably connected to the holder;

a poppet connected to the actuator, said poppet driven by the actuator intermediate an open configuration wherein a fluid passes intermediate the valve seat and the poppet and a closed configuration wherein the poppet forms a seal relative to the valve seat;
wherein the holder, actuator and poppet are positioned within a second cross sectional area parallel to the first cross sectional area when in at least one of the open and closed configurations, said second cross sectional area bounded by a parallel cross section of the first cross sectional area; and

a connector connecting the actuator to the poppet, said connector having a hook with opposing barbs, and said poppet having a cavity with opposing slots in a resilient sleeve, said barbs retained in the slots.

22. (Original) The valve assembly of claim 1 wherein the holder further comprises a shoulder and a biasing member is locating intermediate the shoulder and a portion of the poppet, said biasing member normally locating the poppet against the valve seat to place the valve assembly in the closed configuration.

23. (Original) The valve assembly of claim 21 wherein the holder further comprises a clip which at least assists in fixedly retaining at least a portion of the actuator relative to the holder, said clip located opposite the shoulder from the valve seat.

24-34. (Cancelled)

[00030] Figure 2 shows the first end cap **28** removed from the housing **12**. In this view, the holder **32**, the actuator **34**, the biasing member illustrated as spring **36** **48** and the poppet **38** are visible. Figure 3 is a bottom view of the portion of the valve assembly **10** shown in Figure 2. The actuator **34** is shown retained intermediate clip **40** and legs **42**. In the preferred embodiment the actuator **34** is a shape memory alloy linearly actuating type actuator. The particular model illustrated is manufactured by Nanomuscle, Inc. Nanomuscle's part number NM125 with digital interface PCB. The company and part information is currently available at www.nanomuscle.com "nanomuscle.com". This product utilizes a plurality of linearly moveable shape memory alloy members operably connected together wherein a total movement of the actuator is greater than a movement of any individual shape memory alloy member.

[00039] As can be seen in Figure 5, the holder 32 has a flange **64** **61** which extends into the channel **64** about the neck **60** so that the holder 32 connects to the boss 56 as illustrated in Figure 5. In this manner, the remainder of the holder is substantially cantileveredly connected to the end plug 28 at the neck 60. The flange is a portion of foot 63 which contacts inner face **65** of first end plug 28. The poppet 38 is illustrated biased against the valve seat 46 in Figure 5 by the spring 48 acting against the back **50** of the poppet intermediate the shoulder **52** of the holder 32.